REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

By the foregoing amendment claims 1, 2, 4, and 6 have been amended, and new claims 7 and 8 have been added. No new matter has been added. Thus, claims 1-8 are currently pending.

In the Office Action mailed December 5, 2003, the Examiner objected to the title of the invention as not being clearly indicative of the invention to which the claims are directed. Responsive to this objection, the Applicant has amended the title. The Applicant submits that the objection to the title has now been overcome, and respectfully requests withdrawal thereof. If any additional amendments are required, the Examiner is requested to contact the Applicant's undersigned representative.

Under 35 U.S.C. §103(a), the Examiner rejected claims 1 and 6 as being unpatentable over U.S. Patent No. 5,745,262 to Tatsumi in view of U.S. Patent No. 4,007,488 to Morishita, et al., rejected claims 2 and 3 as being unpatentable over Tatsumi in view of Morishita as applied to claim 1 and further in view of U.S. Patent No. 5,187,569 to Tani; and rejected claims 4 and 5 as being unpatentable over Tatsumi in view of Morishita as applied to claim 1 and further in view of Tani and U.S. Patent No. 5,102,269 to Nakamura, et al. It is noted that claims 1, 2, 4, and 6 have been amended. To the extent that any of these rejections might still be applied to the claims currently pending, they are respectfully traversed as follows.

With regard to claims 1 and 6, the Examiner asserts that:

> Tatsumi discloses . . . detecting a charge amount corresponding to an intensity of light of each color; . . . in accordance with the charge amount corresponding to the intensity of light of each color detected by the preliminary trial image pickup step; and a final image pickup step of controlling the charge accumulation time of photosensitive conversion elements independently for each color by using the electronic shutter and read-out of electric charges from the photoelectric conversion elements . . ..

Office Action at 2-3 (emphasis added). The Applicant respectfully submits that this statement can never be true for the invention of Tatsumi. The Applicant points out, for example, that even the Examiner admits "Tatsumi is lacking the teaching of independently controlling the accumulation time for each color." Office Action at page 3.

The Applicant submits that Tatsumi discloses "an image read-out and processsing apparatus" for:

> carrying out a preliminary read-out operation by irradiating light, which has been produced by a light source, to an image storage sheet, on which an image has been recorded, and by detecting the light carrying image information representing the image, which light has passed through the image storage sheet or has been reflected by the image storage sheet . . . the image information being detected under read-out conditions, in which the amount of light irradiated to the image storage sheet and/or the light accumulation time of the photoelectric conversion means is set to be equal to a predetermined value, and

> carrying out a final read-out operation by irradiating light, . . . the amount of light irradiated to the image storage sheet and/or the light accumulation time of the photoelectric conversion means being adjusted appropriately in the final read-out operation in accordance with preliminary read-out image information . . ..

Tatsumi, text spanning col. 3, line 48 and col. 4, line 11.

The Applicant submits that Tatsumi fails to disclose or suggest at least the feature of a preliminary trial image pickup step of forming a preliminary trial image on the semiconductor chip to let the plurality of photoelectric conversion elements generate and accumulate electric charges during a predetermined charge accumulation time and detecting a charge amount corresponding to an intensity of light of each color, as claimed in claims 1 and as correspondingly claimed in device claim 6, as amended.

Further, the Applicant submits that Tatsumi discloses a single chip system, while Morishita discloses a three chip system and division of color components by color using, for example, a prism 3 (see, e.g., FIGs. 1 and 2 and corresponding text). The Applicant submits that combining Morishita with Tatsumi would therefore render the invention of Tatsumi unfit for its intended purposes at least for this reason.

For at least the above reasons, the Applicant submits that claims 1 and 6, as amended, are allowable over the cited prior art. As claims 2-5 and 7-8 depend from allowable claim 1, the Applicant submits that these claims are likewise allowable at least for this reason.

In addition, with regard to the rejection under §103 in the Office Action, it is also respectfully submitted that the Examiner has not yet set forth a *prima facie* case of obviousness.

The PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 U.S.P.Q.2nd 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002).

In the Office Action, the Examiner merely states that it would have been obvious to combine the cited references, along with Official Notice of various features, so as to accomplish the advantages of the present invention, without citing any motivation within the references for such combination. See, e.g., Office Action at pages 3, 5, 6, 8 and 9. These mere statements are insufficient to constitute proper *prima facie* showings of obviousness.

For all of the above reasons, it is respectfully submitted that the claims now pending patentability distinguish the present invention from the cited references. Accordingly, reconsideration and withdrawal of the outstanding rejections and an issuance of a Notice of Allowance are earnestly solicited.

Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is encouraged to telephone the undersigned representative at the number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of time. The fee for this extension may be charged to our Deposit Account No. 01-2300. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this communication to Deposit Account No. 01-2300.

Respectfully submitted,

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4/5/04
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MARKED-UP VERSION OF AMENDED CLAIMS

1. (Amended) A control method for a solid state image pickup device having a plurality ~~type~~ of photoelectric conversion elements, each of the photoelectric conversion elements being of a type for converting light of each of a plurality of colors into electric charges, a charge read-out region disposed in a column adjacent to each of the photoelectric conversion elements, charge transfer paths disposed adjacent to each column of the charge read-out regions, a mechanical shutter for opening and closing a path of incident light to the plurality ~~type~~ of photoelectric conversion elements, and an electronic shutter for clearing electric charges in each of the plurality ~~type~~ of photoelectric conversion elements, in which said photoelectric conversion elements, charge read-out regions, charge transfer paths, and electronic shutter are integrated in one semiconductor chip and provided with color filters disposed above said photoelectric conversion elements, the control method comprising:

a preliminary trial image pickup step of forming a preliminary trial image on the semiconductor chip to let ~~making~~ the plurality ~~type~~ of photoelectric conversion elements generate and accumulate electric charges during a predetermined charge accumulation time and detecting a charge amount corresponding to an intensity of light of each color;

a calculation step of calculating a charge accumulation time of photosensitive conversion elements independently for each color so as to obtain a good white balance, in accordance with the charge amount corresponding to the intensity of light of each color detected by said preliminary trial image pickup step; and

a final image pickup step of controlling the charge accumulation time of photosensitive conversion elements independently for each color by using the electronic shutter, the mechanical shutter and read-out of electric charges from the photoelectric conversion elements to the charge transfer paths ~~read-out region~~, in accordance with the calculated charge accumulation times, and forming a final image on the semiconductor chip to let ~~making~~ the plurality type of photoelectric conversion elements generate and accumulate charges.

2. (Amended) A control method for a solid state image pickup device according to claim 1, wherein ~~the solid-state image pickup device further comprises charge transfer paths including~~ said charge read-out regions are capable of ~~region for~~ transferring electric charges in the photoelectric conversion elements to said charge transfer paths, the plurality type of photoelectric conversion elements are capable of converting light of at least first to third colors into electric charges, and said final image pickup step comprises the steps of:

(a) starting a first charge accumulation time for the first color by the electronic shutter;

(b) reading electric charges from the photoelectric conversion elements of the first color to the charge transfer paths to terminate the first charge accumulation time of the first color;

(c) starting a second charge accumulation time for the first color, a charge accumulation time for the second color and a charge accumulation time for the third color by the electronic shutter;

(d) reading electric charges from the photoelectric conversion elements of the third color to the charge transfer paths to terminate the charge accumulation time for the third color; and

(e) closing the mechanical shutter to terminate the charge accumulation time for the first color and the charge accumulation time for the second color.

4. (Amended) A control method for a solid state image pickup device according to claim 1, wherein ~~the solid state image pickup device further comprises charge transfer paths including~~ said charge read-out regions are capable of ~~region for~~ transferring electric charges in the photoelectric conversion elements to said charge transfer paths, the plurality type of photoelectric conversion elements are capable of converting light of a least first to third colors into electric charges, and said final image pickup step comprises the steps of:

(a) starting a first charge accumulation time for the first color by the electronic shutter;

(b) reading unnecessary electric charges form the photoelectric conversion elements of the second color to the charge transfer paths to initiate ~~terminate~~ a charge accumulation time of the second color;

(c) reading unnecessary electric charges from the photoelectric conversion elements of the third color to the charge transfer paths to initiate ~~terminate~~ a charge accumulation time of the third color; and

(d) closing the mechanical shutter to terminate the first, second and third charge accumulation times.

6. (Amended) A solid state image pickup device comprising:

a semiconductor substrate;

color filters of red, green, and blue disposed above the semiconductor substrate;

a plurality type of photoelectric conversion elements for converting light of each of red, green and blue colors into electric charges, formed in the semiconductor substrate, the photoelectric conversion elements being disposed in vertical and horizontal directions in a two-dimensional plane;

vertical charge transfer paths for transferring electric charges in the vertical direction, formed in the semiconductor substrate;

read gates for reading electric charges from the photoelectric conversion elements to the vertical charge transfer paths, formed between said photoelectric conversion elements and said vertical charge transfer paths;

a horizontal charge transfer path disposed adjacent to one end of each of the vertical charge transfer paths for transferring electric charges transferred from said vertical charge transfer paths in the horizontal direction;

an electronic shutter formed in said semiconductor substrate for clearing electric charges in the plurality type of photoelectric conversion elements;

preliminary trial image pickup means for forming a preliminary trial image on the semiconductor substrate to let ~~making~~ the plurality type of photoelectric conversion elements generate and accumulate electric charges during a predetermined charge accumulation time and detecting a charge amount corresponding to an intensity of light of each color;

calculation mean for calculating a charge accumulation time of photoelectric conversion elements independently for each color so as to obtain a good white balance, in accordance with the charge amount corresponding to the intensity of light of each color detected by said preliminary trial image pickup means; and

final image pickup means for controlling the charge accumulation time of photoelectric conversion elements independently for each color by using said electronic shutter, said mechanical shutter, and read-out of electric charges from the photoelectric conversion elements to said vertical charge transfer paths, in accordance with the calculated charge accumulation times, and forming a final image on the semiconductor substrate to let ~~making~~ the plurality type of photoelectric conversion elements generate and accumulate electric charges.

7. (New) A control method for a solid state image pickup device according to claim 1, wherein said first, second, and third colors are blue, green, and red, respectively.

8. (New) A control method for a solid state image pickup device according to claim 1, wherein said first, second, and third colors are red, green, and blue, respectively.